

Message Text

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PAGE 01 MOSCOW 05554 231352Z
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SUBJECT: SOVIET COMMENT ON THE PRESIDENTIAL NUCLEAR POLICY STATEMENT

REF: (A) MOSCOW 4541, (B) MOSCOW 5176

1. SUMMARY - A WELL-INFORMED SOVIET SOURCE INDICATES THE U.S. BAN ON RE-PROCESSING IS NOT FULLY UNDERSTOOD OR ACCEPTED HERE; HOWEVER, LARGE SCALE RE-PROCESSING SHOULD NOT BE A REQUIREMENT UNTIL THE END OF THE CENTURY. SOURCE INDICATES THAT SOVIET INTEREST ON INTERNATIONAL COOPERATION ON SPENT FUEL STORAGE IS HIGH, AND THERE MAY BE A GLIMMER OF SOVIET INTEREST IN ALTERNATIVE FUEL CYCLES AS WELL. END SUMMARY.

2. SCICOUNS CALLED ON M.A. STYRIKOVICH, SECRETARY, DEPARTMENT OF PHYSICAL, TECHNICAL PROBLEMS OF POWER ENGINEERING, ACADEMY OF SCIENCES, APRIL 21 TO DISCUSS PRESIDENTIAL NUCLEAR POWER POLICY STATEMENT, WHICH HAD BEEN FORWARDED TO HIM EARLIER. STYRIKOVICH INDICATED THAT HE HAD JUST BEEN DISCUSSING WITH ACADEMY PRESIDENT ALEXANDROV (ALSO DIRECTOR OF KURCHATOV INSTITUTE)
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PAGE 02 MOSCOW 05554 231352Z

THE PRESIDENTIAL STATEMENT.

3. STYRIKOVICH STATED THE SOVIETS ESTIMATE THAT, WITHOUT RE-PROCESSING, THE DEMAND FOR NATURAL URANIUM FOR LIGHT WATER REACTORS WOULD ONLY BE INCREASED BY 10 PERCENT. THEREFORE THE PRESIDENTIAL BAN ON RE-PROCESSING SHOULD NOT BE A PARTICULARLY HEAVY BURDEN FOR U.S. NUCLEAR INDUSTRY; HOWEVER,

A GOOD DEAL DEPENDS ON THE FUTURE PRICE OF URANIUM. STYRIKOVICH WAS OPTIMISTIC ON THIS SCORE, STATING THAT NEW SOURCES OF NATURAL URANIUM SHOULD BECOME AVAILABLE WITH INCREASED GEOLOGIC EXPLORATION. STYRIKOVICH FORESAW RAPID WORLD DEVELOPMENT OF BREEDER REACTOR AND HYBRID FUSION THAT WOULD MAKE WIDE-SCALE RE-PROCESSING OF PLUTONIUM ESSENTIAL BY THE END OF THE CENTURY (SEE REF A).

4. STYRIKOVICH SAID THE SOVIET UNION COULD NOT FULLY UNDERSTAND U.S. CONCERNS ABOUT THE PLUTONIUM CYCLE. AS FAR AS HEALTH HAZARDS GO, THE SOVIETS BELIEVE THAT SAFE STORAGE AND HANDLING OF PLUTONIUM IS NOT AN EXTRAORDINARILY DIFFICULT TASK. THE SOVIETS ALSO BELIEVE THE U.S. IS A BIT PARANOIAC ON THE THREAT OF A TERRORIST GROUP STEALING PLUTONIUM FROM SPEND FUEL TO MAKE A HOME-MADE BOMB. THE TECHNOLOGY FOR BOMB-MAKING IS RATHER SOPHISTICATED, AND MOREOVER THE MATERIAL WOULD CONTAIN HIGHER ACTINIDE ISOTOPES, WHICH ARE GAMMA-RAY PRODUCERS THAT SHOULD BE EASILY DETECTABLE.

5. STYRIKOVICH EXPRESSED STRONG AGREEMENT WITH U.S. CONCERN ABOUT THE NEED TO LIMIT THE SPREAD OF RE-PROCESSING CAPABILITIES TO THIRD COUNTRIES. HE STATED ECONOMICS DO NOT YET JUSTIFY THE NEED FOR RE-PROCESSING OF SPENT FUEL FROM LIGHT WATER REACTORS, AND EXISTENCE OF RE-PROCESSING PLANTS IN THIRD COUNTRIES DOES POSE A DEFINITE PROLIFERATION THREAT. HE SAID HE WAS PERSONALLY A LITTLE SUSPICIOUS AS TO WHY INDIA AND BRAZIL WOULD NEED PLUTONIUM-CYCLE RE-PROCESSING SINCE BOTH COUNTRIES HAVE LARGE SUPPLIES OF MONAZITE SANDS THAT COULD KEEP THEIR REACTORS WELL SUPPLIED, IF THEY OPTED LIMITED OFFICIAL USE

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PAGE 03 MOSCOW 05554 231352Z

FOR THE THORIUM CYCLE. NOTING THE PRESIDENT'S CALL FOR A STEP-UP ON CENTRIFUGE TECHNOLOGY FOR ENRICHMENT, STYRIKOVICH STATED THE SOVIETS PERCEIVE THIS AS AN INCONSISTENCY IN THE U.S. NON-PROLIFERATION POLICY. HE STATED CENTRIFUGE ENRICHMENT PLANTS CAN BE MADE SO SMALL AS TO BE UNDETECTABLE BY SATELLITE SURVEILLANCE AND THIS WOULD BE THE EASIEST WAY FOR A DETERMINED THIRD COUNTRY TO JOIN THE NUCLEAR CLUB.

6. STYRIKOVICH STATED HE FORESAW SOME POSSIBILITIES FOR DEVELOPMENT OF THE THORIUM CYCLE BUT IT WOULD REQUIRE A MAJOR INVESTMENT AND COULD ONLY BE DONE THROUGH INTERNATIONAL COOPERATION. HE NOTED THE PROVEN RESOURCES OF THORIUM IN THE WORLD ARE ALREADY SEVERAL TIMES THAT OF URANIUM AND PROSPECTING FOR THIS ELEMENT HAS SCARECELY BEGUN. PROBABLY THE BEST USE OF THORIUM WOULD BE TO CONVERT IT TO U 233 IN FAST BREEDERS OR FUSION HYBRIDS. STYRIKOVICH NOTED THERE WAS A NON-PROLIFERATION DILEMMA HERE SINCE U233 CAN BE MADE INTO WEAPONS-GRADE MATERIAL. IF IT IS POISONED, WITH PERHAPS 20 PERCENT U 238, TO PREVENT A THIRD COUNTRY

FROM USING NUCLEAR FUEL FOR WEAPONS PURPOSES, THEN SOME PLUTONIUM WOULD BE PRODUCED IN THE PROCESS. DESPITE THIS DIFFICULTY STYRIKOVICH OPINED THAT THE THORIUM CYCLE WOULD BE WORTH A LOOK AS AN ALTERNATIVE TO URANIUM CYCLE.

7. STYRIKOVICH WAS VAGUE ON WHAT THE CURRENT PLANS AND CAPABILITIES OF THE SOVIET UNION ARE FOR RE-PROCESSING. HE MADE AN OBLIQUE REFERENCE TO "CHEAP SIBERIAN ELECTRICITY" WHICH HAS OR MAY BE OFFERED TO THIRD COUNTRIES FOR RE-PROCESSING OF SPENT FUEL IN THE SOVIET UNION. IN RESPONSE TO SCICOUNS COMMENT THAT WE UNDERSTOOD THE SOVIETS HAVE BEEN STORING SPENT FUEL AND URANIUM TAILS, STYRIKOVICH NOTED THAT THE AGING OF SUCH MATERIALS MAKES SUBSEQUENT RE-PROCESSING EASIER.

8. CONCERNING SPENT FUEL AND RADIOACTIVE WASTE STORAGE, STYRIKOVICH APPEARED OPTIMISTIC THAT THESE LIMITED OFFICIAL USE

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PAGE 04 MOSCOW 05554 231352Z

PROBLEMS COULD BE SATISFACTORILY RESOLVED AND AT RELATIVELY LOW COST. STYRIKOVICH NOTED THAT THE VOLUME OF LONG HALF-LIFE RADIOACTIVE WASTES CAN BE ENORMOUSLY REDUCED; THE WASTES DIRECTLY DUE TO ENERGY PRODUCTION IN A LIGHT WATER REACTOR, FOR EXAMPLE, ONLY AMOUNTS TO ONE KILOGRAM PER MEGAWATT/YEAR. MANY TIMES THAT AMOUNT CURRENTLY NEEDS SPECIAL STORAGE BECAUSE WASTES HAVE NOT BEEN CONCENTRATED AND NON-NUCLEAR MATERIALS HAVE BEEN NEEDLESSLY IRRADIATED. THE SOVIETS HAVE BEEN DEVELOPING METHODS, SUCH AS THE TRAPPING OF RADIOACTIVE NOBLE GASES IN INACTIVATED CHARCOAL, WHICH SHOULD CONSIDERABLY REDUCE SAFE STORAGE COSTS. THE AMOUNT OF HIGHLY RADIOACTIVE, LONG-HALF-LIFE WASTES COULD BE REDUCED TO SUCH A SMALL VOLUME THAT SAFE DISPOSAL OF THESE MATERIALS, SUCH AS BEING BURIED DEEP UNDERGROUND, WOULD NOT REPRESENT A MAJOR COST IN THE TOTAL FUEL CYCLE. STYRIKOVICH EXPRESSED THE BELIEF THAT INTERNATIONAL COOPERATION ON RESEARCH IN THIS AREA WOULD BE DESIRABLE.

9. COMMENT: WHILE STYRIKOVICH'S COMMENTS CANNOT BE TAKEN AS SOVIET POLICY THEY REPRESENT A VERY WELL-INFORMED VIEW. HE REAFFIRMED THE SOVIET PREDILCTION OF PLUTONIUM BREEDING AND THE NEED FOR RE-PROCESSING IN THIS CYCLE. (SEE REFTELS A AND B). IT WOULD APPEARFROM HIS COMMENTS THAT THE SOVIETS ARE MUCH LESS ATTACHED TO RE-PROCESSING OF SPENT FUEL FROM LIGHT WATER REACTORS. WHILE STYRIKOVICH WAS DELIVERATELY ELUSIVE ON WHAT RE-PROCESSING IS NOW DONE IN THE SOVIET UNION, IT APPEARS THAT THE MAJOR SOVIET EFFORT IN THIS AREA WILL AWAIT THE COMING ON-LINE OF THE BREEDERS. HIS COMMENTS ON THE THORIUM CYCLE, WHICH ARE CONSIDERABLY MORE POSITIVE THAN THOSE OF OTHER SOVIET AUTHORITIES INCLUDING SCAE DEPUTY CHAIRMAN MOROKHOV,

MAY REPRESENT ONLY A PERSONAL VIEW, OR THAT OF THE ACADEMY
OF SCIENCES. END COMMENT.
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